

REMARKS

Applicant appreciates the Examiner's thorough consideration provided the present application. Claims 1-28 are now present in the application. The specification, the abstract, and claims 1, 5-18 and 21-28 have been amended. Claims 1 and 16 are independent. Reconsideration of this application, as amended, is respectfully requested.

Specification Objections

The abstract has been objected to due to its undue length. In view of the foregoing amendments, it is respectfully submitted that this objection has been addressed. Reconsideration and withdrawal of these objections are respectfully requested.

In addition, the specification has been amended to replace the term "counter electrode panel" with "counter electrode". A Substitute Specification is attached hereto. This statement is included in accordance with 37 C.F.R. § 1.125 to indicate that it is the undersigned's belief that no new matter has been included in the Substitute Specification and Abstract.

A comparison version of the specification is provided. This comparison document indicates all additions and deletions to the originally filed specification. Applicant respectfully submits that the Substitute Specification includes the same changes as are indicated in the comparison document which compares the originally filed specification to the amended specification or Substitute Specification.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nohno, U.S. Patent No. 6,239,788, in view of Knapp, U.S. Patent No. 5,270,711. This rejection is respectfully traversed.

In light of the foregoing amendments to the claims, Applicant respectfully submits that this rejection has been obviated and/or rendered moot.

Independent claim 1 now recites a combination of steps including “a first touch-position sensing step, which detects values of liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode, respectively, and detects a scan-line-direction touch position according to the values of the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode during idling time in-between writing periods, each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods”, “a charging step, which charges a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected” and “a second touch-position sensing step, which detects values of liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode, respectively, and detects a data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode after the voltage signal is charged”.

Independent claim 16 now recites a combination of elements including “a first sensing circuit, which respectively electrically connects to the scan lines needed to be detected, detects values of liquid crystal capacitances formed between the scan lines needed to be detected and the

counter electrode, and detects a scan-line-direction touch position according to the values of the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode”, “a timing control circuit, which electrically connects to the first sensing circuit and controls the first sensing circuit to detect the liquid crystal capacitances formed between the scan lines needed to be detected and the counter electrode during idling time in-between writing periods, each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods”, “a voltage-signal generating circuit, which electrically connects to the timing control circuit and each of the data lines, wherein the timing control circuit controls the voltage-signal generating circuit to charge a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected” and “a second sensing circuit, which respectively electrically connects to each of the data lines needed to be detected, detects values of liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode, and detects a data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the counter electrode after the voltage signal is charged”.

Applicant respectfully submits that the above combination of steps and elements as set forth in amended independent claims 1 and 16 are not disclosed nor suggested by the references relied on by the Examiner.

Nohno in FIG. 1 discloses a TFT-LCD panel 31, an opposite substrate 42, an opposite electrode 43, a source electrode S_n , a gate electrode G_m , a TFT 44 and a pixel electrode 45. Liquid crystals are filled in a sealed manner in a space between the pixel electrode 45 and the opposite electrode 43. As shown in FIG. 3 of Nohno, the capacitor C_{p1} denotes an electrostatic

coupling capacitance of the finger with the selected electrodes Ss and Gs, and the capacitor Cp2 denotes an electrostatic coupling capacitance of the finger with the electrodes other than the above selected electrodes (see also col. 14, lines 37-42). Nohno also discloses that a current i_1 , flowing between the finger and the selected electrodes Ss and Gs is measured by an ammeter 54, and then the position in which the absolute value of the extreme value of the detection current i_1 obtained assumes the maximum value is determined as the finger position (see col. 16, lines 66-67; col. 17, lines 1-2).

However, the present invention as claimed in claims 1 and 16 detects the liquid crystal capacitance formed between the counter electrode and the scan line, charges a voltage signal, and detects the liquid crystal capacitance formed between the counter electrode and the data line, which is different from Nohno's measurement of the current flowing between the finger and the selected electrodes Ss and Gs. Therefore, Nohno fails to teach the first and second touch-position sensing steps of claim 1 and the first and second sensing circuit of claim 16.

In addition, Nohno in col. 14, lines 58-60 teaches that the excitation signal voltage V_{sin} is applied to the source electrode Sn, gate electrode Gm and the opposite electrode 43 of the TFT LCD panel 31. However, the present invention as claimed in claims 1 and 16 a voltage signal is charged into each of the data lines needed to be detected after the scan-line-direction touch position Y has been detected, which is different from Nohno's V_{sin} applied to the source electrode Sn, gate electrode Gm and the opposite electrode 43. Therefore, Nohno also fails to teach the charging step of claim 1 and the timing control circuit and the voltage-signal generating circuit of claim 16.

With regard to the Examiner's reliance on Knapp, this reference has only been relied on for its teachings of the touch electrode pad 26. This reference also fails to disclose the above combinations of steps and elements as set forth in amended independent claims 1 and 16. Accordingly, Knapp fails to cure the deficiencies of Nohn.

In addition, Knapp discloses that the touch pad 26 comprises an electrode formed separately to, but interconnected with, the components 14 and 16 or alternatively may be constituted by part or all of the electrode of the capacitor 14 connected to the active device 16 (see col. 5, lines 23-27). However, the touch electrode pad 26 is not the counter electrode of a LCD as recited in claims 1 and 16.

Accordingly, neither of the references utilized by the Examiner individually or in combination teaches or suggests the limitations of amended independent claims 1 and 16 or their dependent claims. Therefore, Applicant respectfully submits that independent claims 1 and 16 and their dependent claims clearly define over the teachings of the references relied on by the Examiner.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

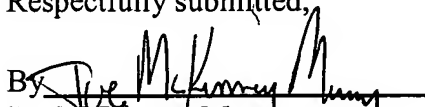
In the event there are any matters remaining in this application, the Examiner is invited to contact Joe McKinney Muncy, Registration No. 32,334 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By


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Attachments: Substitute Specification
Comparison version of the specification